

What is Claimed is:

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Al 7

1. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:

a substrate comprising a polymeric film; and

a polymeric coating disposed on the substrate over substantially all of the topographical surface area of the laminate and comprising an ionic surface and one or more layers;

10 wherein at least one layer comprises at least one polymer made from 2-vinylpyridine, 3-vinylpyridine, 4-vinylpyridine, (3-acrylamidopropyl)trimethylammonium chloride, 2-diethylaminoethyl acrylate, 2-diethylaminoethyl methacrylate, 3-dimethylaminopropyl acrylate, 3-dimethylaminopropyl methacrylate, 2-aminoethyl methacrylate, dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, 2-acryloxyethyltrimethylammonium chloride, diallyldimethylammonium chloride, 2-methacryloxyethyltrimethylammonium chloride, 3-methacryloxy-2-hydroxypropyltrimethylammonium chloride, 3-aminopropylmethacrylamide, dimethylaminoethyl methacrylamide, dimethylaminopropyl acrylamide, 4-vinylbenzyltrimethylammonium chloride, 4-vinyl-1-methylpyridinium bromide, lysine, allylamine, vinylamine, nylons, chitosan, or any combination thereof.

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2. The laminate of claim 1 further comprising a mask layer between the substrate and the polymeric coating.

25 3. The laminate of claim 1 further comprising a mask layer in direct contact with the substrate.

4. The laminate of claim 1 wherein the coating has a thickness from about 100 Å to about 50 µm.

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5. The laminate of claim 4 wherein the coating has a thickness from about 100 Å to about 30 µm.

6. The laminate of claim 5 wherein the coating has a thickness from about 100 Å to about 20 µm.

7. The method of claim 1 wherein at least one layer comprises an amphoteric polymer.

8. A composition comprising:
the laminate of claim 1; and
one or more sample molecules affixed to the polymeric coating.

9. The composition of claim 8 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.

10. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:

a substrate comprising a polymeric film; and

a polymeric coating disposed on the substrate over substantially all of the topographical surface area of the laminate and comprising an ionic surface and one or more layers;

wherein at least one layer comprises at least one polymer made from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, vinylbenzoic acid, N-acryloylamino acid, N-methacryloylamino acid, 2-carboxyethyl acrylate, vinyl phosphoric acid, vinyl phosphonic acid, monoacryloxyethyl phosphate, sulfoethyl methacrylate, sulfopropyl methacrylate, 3-sulfopropyldimethyl-3-methacrylamidopropylammonium inner salt, styrenesulfonic acid, 2-acrylamido-2-methyl-1-propanesulfonic acid, a sulfonated polysaccharide, a carboxylated polysaccharide, or any combination thereof.

11. The laminate of claim 10 wherein the sulfonated polysaccharide is heparin, dermatan sulfate, or dextran sulfate.

12. The laminate of claim 10 wherein the carboxylated polysaccharide is iduronic acid, carboxymethylcellulose, or alginic acid.

13. A composition comprising:
the laminate of claim 10; and
one or more sample molecules affixed to the polymeric coating.

14. The composition of claim 13 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.

15. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:

a substrate comprising a polymeric film;
a hydrogel disposed on the substrate; and
a coating disposed on the hydrogel over substantially all of the topographical surface area of the laminate, the coating comprising an anionic surface and one or more layers.

16. The laminate of claim 15 wherein at least one layer comprises polymers made from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, vinylbenzoic acid, N-acryloylamino acid, N-methacryloylamino acid, 2-carboxyethyl acrylate, vinyl phosphoric acid, vinyl phosphonic acid, monoacryloxyethyl phosphate, sulfoethyl methacrylate, sulfopropyl methacrylate, 3-sulfopropyldimethyl-3-methacrylamidopropylammonium inner salt, styrenesulfonic acid, 2-acrylamido-2-methyl-1-propanesulfonic acid, carboxylated polyvinylchloride, a sulfonated polysaccharide, a carboxylated polysaccharide, or any combination thereof.

17. The laminate of claim 16 wherein the sulfonated polysaccharide is heparin, dermatan sulfate, or dextran sulfate.

18. The laminate of claim 16 wherein the carboxylated polysaccharide is iduronic acid, carboxymethylcellulose, or alginic acid.

19. The laminate of claim 15 wherein the hydrogel comprises one or more linking agents.

20. The laminate of claim 19 wherein the linking agents comprise azlactone copolymers.

21. A composition comprising:
the laminate of claim 14; and
one or more sample molecules affixed to the coating.

22. The composition of claim 21 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.

23. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:

a substrate comprising a polymeric film;

a hydrogel disposed on the substrate; and

a coating disposed on the hydrogel over substantially all of the topographical surface area of the laminate, the coating comprising a cationic surface and one or more layers;

wherein at least one layer comprises at least one polymer made from 2-vinylpyridine, 3-vinylpyridine, 4-vinylpyridine, (3-acrylamidopropyl)trimethylammonium chloride, 2-diethylaminoethyl acrylate, 2-diethylaminoethyl methacrylate, 3-

dimethylaminopropyl acrylate, 3-dimethylaminopropyl methacrylate, 2-aminoethyl methacrylate, dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, 2-acryloxyethyltrimethylammonium chloride, diallyldimethylammonium chloride, 2-methacryloxyethyltrimethylammonium chloride, 3-methacryloxy-2-hydroxypropyltrimethylammonium chloride, 3-aminopropylmethacrylamide, dimethylaminoethyl methacrylamide, dimethylaminopropyl acrylamide, 4-vinylbenzyltrimethylammonium chloride, 4-vinyl-1-methylpyridinium bromide, lysine, allylamine, vinylamine, nylons, chitosan, or any combination thereof.

24. The laminate of claim 23 wherein the hydrogel comprises one or more linking agents.

25. The laminate of claim 24 wherein the linking agents comprise azlactone copolymers.

26. A composition comprising:
the laminate of claim 23; and
one or more sample molecules affixed to the coating.

27. The composition of claim 26 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.

28. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:

a substrate comprising a polymeric film;
a hydrogel comprising at least one linking agent disposed on the substrate; and
one or more bifunctional ionic molecules covalently linked to at least one linking agent.

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29. The laminate of claim 28 wherein at least one bifunctional ionic molecule is an aminocarboxylic acid, an aminosulfonic acid, an aminophosphonic acid, an aminophosphoric acid, or a polyamine.

30. A composition comprising:
the laminate of claim 28; and
one or more sample molecules affixed to the one or more bifunctional ionic molecules.

31. The composition of claim 30 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.

32. A laminate having a projected surface area and a topographical surface area wherein the topographical surface area is greater than the projected surface area, and comprising:
a substrate comprising a polymeric film;
a hydrogel disposed on the substrate and comprising one or more hydrolyzed azlactone moieties.

33. A composition comprising:
the laminate of claim 32; and
one or more sample molecules affixed to one or more hydrolyzed azlactone moieties.

34. The composition of claim 29 wherein at least one sample molecule is a polypeptide, a polynucleotide, a polysaccharide, or any combination thereof.